

What is claimed is:

1. A heat exchanger for a vehicle, comprising:

a radiator arranged in an engine room, for cooling a cooling water for an engine of the vehicle; and

5 a condenser arranged in front of the radiator in a traveling direction of the vehicle, for cooling a refrigerant for an air conditioning cycle of the vehicle, the condenser including a condenser core part allowing the refrigerant to flow therein and a refrigerant passage arranged on at least either side of the condenser core part in the vertical direction of the heat exchanger and also communicated with the condenser core part,

10 wherein the refrigerant passage is formed so as to allow the refrigerant to flow therein in mutually-opposite directions, and

wherein the refrigerant passage is provided, on one side thereof in the horizontal direction of the heat exchanger, with an inlet through which the refrigerant is introduced into the refrigerant passage and an outlet

15 through which the refrigerant is discharged from the refrigerant passage.

2. The heat exchanger for the vehicle of claim 1, wherein a vertical height of the condenser is smaller than a vertical height of the radiator.

20 3. The heat exchanger for the vehicle of claim 1, wherein the refrigerant passage is partially partitioned to upper and lower passages, thereby allowing the refrigerant to flow in the refrigerant passage in the mutually-opposite directions.

4. The heat exchanger for the vehicle of claim 1, wherein the refrigerant passage is formed by pipe members juxtaposed vertically to extend in the horizontal direction of the heat exchanger, the pipe members being communicated with each other through a communication part, thereby
5 allowing the refrigerant to flow in the refrigerant passage in the mutually-opposite directions.

5. The heat exchanger for the vehicle of claim 1, further comprising an oil cooler for cooling a transmission oil of the engine, the oil cooler
10 including an oil-cooler core part allowing the transmission oil to flow therein, wherein
the refrigerant passage is communicated with the condenser core part in a manner that the refrigerant introduced into the refrigerant passage via the inlet flows in one side of the condenser core part in the horizontal
15 direction and successively flows toward the other side of the condenser core part in the horizontal direction,

the oil-cooler core part of the oil cooler is integrated with the one side of the condenser core part, and

the oil cooler is adapted so as to allow the transmission oil to flow in
20 one side of the oil-cooler core part opposite to the other side of the oil-cooler core part integrated with the condenser core part.

6. The heat exchanger for the vehicle of claim 5, wherein
the oil cooler further includes an oil passage arranged on at least
25 either side of the oil-cooler core part in the vertical direction of the heat

exchanger and also arranged in a space ahead of the radiator,

the oil passage is formed so as to allow the transmission oil to flow therein in mutually-opposite directions, and

the oil passage is provided, on one side thereof apart from the
5 condenser in the horizontal direction of the heat exchanger, with an inlet through which the transmission oil is introduced into the oil passage and an outlet through which the transmission oil is discharged from the oil passage.

7. The heat exchanger for the vehicle of claim 4, further comprising a
10 block having an introductory port formed therein for connection with the inlet of the refrigerant passage and a drain port formed therein for connection with the outlet of the refrigerant passage,
wherein the introductory port is provided, on an opening side thereof, with a tapered part, and
15 wherein the drain port is provided, on an opening side thereof, with a tapered part.

8. The heat exchanger for the vehicle of claim 7, wherein
one of the introductory port and the drain port is convex-shaped,
20 while the other of the introductory port and the drain port is concave-shaped, and

the convex-shaped port is adapted so that its outer periphery comes into contact with an end of one of the pipe members through the tapered part, while the concave-shaped port is adapted so that its inner periphery comes
25 into contact with an end of the other one of the pipe members through the

tapered part.

9. The heat exchanger for the vehicle of claim 4, wherein

the communication part is formed by a cylindrical joint having upper

5 and lower tapered portions,

the pipe members are provided, at corresponding positions thereof,

with insertion holes respectively, and

the upper and lower tapered portions of the cylindrical joint are fitted
to the insertion holes of the pipe members under pressure, whereby the pipe

10 members are communicated with each other.

10. The heat exchanger for the vehicle of claim 4, wherein

the pipe member for connection with the drain port of the block has
an outer diameter larger than an outer diameter of the pipe member for

15 connection with the introductory port of the block.